

word is added to the speech recognition dictionary. To determine where in the dictionary to locate the new word, the new word is assigned a pre-filter class by comparing the new word to words already classified.

The method of claim 8 includes assigning a pre-filtering class to a word by matching the first two letters of the word to classified words starting with the same two letters to form a sub-list of classified words, matching phonemes of the word to phonemes of the classified words in the sub-list to form a class list, and placing the word in the class list.

The method of claim 10 includes assigning a pre-filtering class to a word by performing a direct look-up of a first phoneme of the word in a database of classified words organized alphabetically by their phonemes, matching the first phoneme of the word to a first word in the database having the same first phoneme, selecting the first word in the database having the same first phoneme and following words in the database to form a sub-list, matching the first phoneme of the word to the first phoneme of the classified words in the sub-list to form a class list, and placing the word in the class list.

The Examiner's rejections states:
Hutchins (5208897) does not explicitly teach the use of the recognition system as a means to add the recognized word to a speech recognition dictionary, however, Brown et al (5293451) teaches the use of a spelling technique to add recognized words to a speech recognition dictionary (col. 13, lines 42-50). Therefore, it would have been obvious to one of ordinary skill in the art of

recognition technology to add the recognized word as taught by Hutchins (5208897) to a dictionary because it would advantageously allow the user to update the word models (Brown et al (5293451), col. 13, lines 42-50).

The Examiner is respectfully reminded that claims 8 and 10 are directed to a method of assigning a pre-filtering class to a word when adding a word to a speech recognition dictionary, and not to "the use of the recognition system as a means to add the recognized word to a speech recognition dictionary." The method permits proper placement of the new word in the class list, as recited in the last step of claims 8 and 10. Applicants submit that neither Hutchins nor Brown, whether taken alone or in combination, describes or suggests such a method.

As discussed in our prior response, dated June 4, 1999, Hutchins describes adding words to a vocabulary by writing SubSyllable spellings to describe them (see col. 24, line 50 to col. 27, line 16). Hutchins does not describe adding a word to a speech recognition dictionary by assigning a prefiltering class to the word.

In rejecting claims 8 and 10, the Examiner has again referred to various sections of Hutchins' columns 10, 11, and 15.

As pointed out in our prior response, these sections are directed to Hutchins' method of speech recognition and are not directed to adding a word to a speech recognition dictionary.

Furthermore, Hutchins' method of adding a word to a vocabulary does not address the placement of the word in a speech

recognition dictionary. There is no discussion in Hutchins of assigning a pre-filtering class to a word when adding a word to a dictionary, as recited in claims 8 and 10. Nor does Hutchins describe matching aspects of the word to aspects of words that have already been classified. In particular, Hutchins does not describe matching the first two letters of a word with classified words and matching phonemes of the word with classified words, as recited in claim 8, nor does Hutchins describe matching the first phoneme of the word to words in a database having the same first phoneme, as recited in claim 10. Applicants respectfully submit that the Examiner is not free to ignore these claim limitations.

The Examiner's reliance on Brown to overcome the deficiencies in Hutchins is misplaced.

The Examiner refers to col. 13, lines 42-50 of Brown, which states:

The calculated expansion set match score and the calculated selection match score are shown in Table 13. If the improvement in the match score exceeds the selected nonzero threshold value, then the word will be modelled with the word models in the expansion set. In that case, the word "LOG" will be modelled with the pronunciation "LOG" and "LAG", but will not be modelled with the pronunciations "LOJ" or "LAJ".

This passage from Brown deals with the modelling of words with various pronunciations. It certainly does not describe a method of assigning a pre-filtering class to a word when adding a word to a dictionary, as recited in claims 8 and

10. In particular, the passage does not describe matching the first two letters of a word with classified words and matching phonemes of the word with classified words, as recited in claim 8, or matching the first phoneme of the word to words in a database having the same first phoneme, as recited in claim 10.

Therefore, applicants submit that claims 8 and 10, and the claims dependent thereon, are patentable over Hutchins in view of Brown for at least these reasons.

Claim 7

We now turn to the Examiner's rejection of claim 7 as anticipated by Brown.

Claim 7 is directed to adding a word to a speech recognition vocabulary. A spelling of the word is used to generate a net of possible phonetic pronunciations of the word. The possible pronunciation from the net that best matches an utterance of the word is selected using speech recognition. An example of a net generated according to the invention is shown in Fig. 16 and described on page 35. By generating a net, all phonemes associated with a letter node of the net can be evaluated with paths of the net that do not contain phonemes corresponding to the spoken word being pruned out using speech recognition.

In the Examiner's "Response to Arguments," the Examiner states:

Applicant argues that Brown limits the number of possible word models by selecting the highest probability sound models. Examiner argues that Brown teaches a plurality of possibilities (e.g., col. 6 lines 7-11) and that Brown teaches the concept of a plurality of choices; i.e., Brown advances the old and well known technology from a plethora of choices to providing a limited number of choices, for the old and well known reason of reduction of a data set will reduce storage space and improve access times.

Applicants submit that Brown does not describe using the spelling of a word to generate a net of possible pronunciations of a word.

The Examiner is again ignoring limitations in the claim language. Claim 7 recites "creating a net of possible phonetic pronunciations." Nowhere in Brown, does Brown describe using the spelling of a word to generate a net.

As discussed in our prior response, Brown describes using the spelling of a word to create a list of possible word models using a model of spelling-to-sound probabilities, such as the model shown in TABLE 2 of Brown. To limit the number of possible word models in the list, Brown selects only the one or two sound models having the highest probabilities (see, e.g., col 6, lines 7-11). The Examiner points to this same section in arguing that Brown teaches a plurality of possibilities. Col. 6, lines 7-11 reads as follows:

While it is possible to examine all 343,000 possible word models for "LOG" to determine the best word models, various criteria can be used for selecting from the 343,000 possible

word models only those models which are expected to be the best. In this example, for each letter in the word "LOG" the one or two component sound models having the highest probabilities were selected for constructing possible word models for "LOG".

Clearly, in Brown, rather than using a net, which has the advantage of permitting the evaluation of all possible phonemes and of managing the large number of possible phoneme matches by using speech recognition to prune out paths of the net that do not contain phonemes corresponding to the spoken word, Brown limits the number of possible word models by selecting only the highest probability sound models for evaluation. Brown's method has the drawback of never analyzing the lower probability sound models. Applicants' method addresses this very drawback.

The Examiner argues that Brown "advances the old and well known technology from a plethora of choices to providing a limited number of choices, for the old and well known reason of reduction of a data set will reduce storage space and improve access times." This is precisely what applicants' invention does not do. Rather than reducing the data set, losing valuable information, applicants' invention uses the spelling of the word to generate a net to analyze lower probability sound models.

Therefore, applicants submit that claim 7 is patentable over Brown for at least these reasons.

Applicants submit that all of the claims are now in condition for allowance, which action is requested.